

IN THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1-55. (Canceled)

56. (Previously presented) A method of judging a biological activity in an environment contaminated with an organochlorine compound that is at least one of tetrachloroethylene (PCE) and trichloroethylene (TCE), the method comprising:

amplifying a nucleic acid extracted from an environmental sample by a gene amplification method so as to use the amplified product as a target;

hybridizing the target to a DNA probe including a base sequence unique to each of 17 types of anaerobic bacteria denoted below as A to Q, which are related to degradation of the organochlorine compound, in an attempt to detect the 17 types of bacteria in the environment; and

judging capability of the environment to eliminate the organochlorine compound based on degrading capability of the each of 17 types of bacteria that is detected with respect to the organochlorine compound and a dechlorinated product thereof,

wherein the DNA probe is a combination of 87 types of DNA probes, each of which is bonded specifically to an internal transcribed spacer region of any one of the 17 types of bacteria denoted below as A to Q without occurrence of cross-hybridization, and each of the 87 types of DNA probes has any one of base sequences described below in (1) or (4):

(1) A base sequence represented by each of SEQ ID NOS: 19 to 105 of the Sequence Listing,

(4) A base sequence complementary to each of the base sequences described in (1),

A: Dehalospirillum multivorans

B: Desulfitobacterium frappieri

C: Actinomycetales Sm-1 (Rhodococcus sp. Sm-1)

D: Rhodococcus rhodococcus

E: Xanthobacter flavus

F: Mycobacterium L1

G: *Desulfomicrobium norvegicum* (*Desulfovibrio baculatus*)

H: *Desulfitobacterium dehalogenans*

I: *Desulfitobacterium hafniense*

J: *Clostridium formicoaceticum*

K: *Desulfuromonas chloroethenica*

L: *Acetobacterium woodii* DSM 1030

M: *Dehalobacter restrictus*

N: *Desulfitobacterium* sp. strain PCE1

O: *Desulfitobacterium frappieri* TCE1

P: *Acetobacterium woodii* DSM 2396

Q: *Desulfomonile tiedjei* DCB-1.

57-58. (Canceled)

59. (Previously presented) The method according to claim 56,
wherein the gene amplification method with respect to the nucleic acid uses as a sense primer, a primer that contains a polynucleotide comprising a base sequence represented by SEQ ID NO: 116 of the Sequence Listing, and as an antisense primer, a primer that contains a polynucleotide comprising a base sequence represented by SEQ ID NO: 117 of the Sequence Listing.

60. (Previously presented) The method according to claim 56,
wherein the contaminated environment is selected from a group consisting of soil, groundwater, pond water and seawater.

61. (Withdrawn) A bioremediation method with respect to an environment contaminated with an organochlorine compound that is at least one of PCE and TCE, the method comprising steps of:
judging a biological activity in the environment by the method according to claim 56;
and

stimulating, when a bacterium related to degradation of the organochlorine compound is detected, growth and/or an activity of the bacterium so as to enhance the degradation of the organochlorine compound or a dechlorinated product of the organochlorine compound.

62. (Withdrawn) A bioremediation method with respect to an environment contaminated with an organochlorine compound that is at least one of PCE and TCE, the method comprising steps of:

judging a biological activity in the environment by the method according to claim 56;
and

adding at least one of the types of bacteria related to degradation of the organochlorine compound other than a detected bacterium to the environment so as to enhance the degradation of the organochlorine compound or a dechlorinated product of the organochlorine compound.

63. (Withdrawn) A device for detecting the bacteria used in the method according to claim 56 comprising the 87 types of DNA probes that are immobilized,

wherein the device allows the 17 types of bacteria to be detected at the same time.

64-65. (Canceled)

66. (Withdrawn) A DNA microarray that is used in the method according to claim 56 comprising a substrate on which the 87 types of DNA probes are immobilized,

wherein the DNA microarray allows the 17 types of bacteria to be detected at the same time.

67-68. (Canceled)

69. (Withdrawn) A kit for detecting the bacteria used in the method according to claim 56 comprising:

the 87 types of DNA probes; and

a primer for gene amplification and a reagent for gene amplification that are used for preparing a target to be hybridized to the 87 types of DNA probes so as to be detected.

70-71. (Canceled)

72. (Withdrawn) A kit for detecting the bacteria used in the method according to claim 56 comprising:

a DNA microarray comprising a substrate on which the 87 types of DNA probes are immobilized; and

a primer for gene amplification and a reagent for gene amplification that are used for preparing a target to be hybridized to the 87 types of DNA probes so as to be detected.

73. (Canceled)